AMENDMENT UNDER 37 CFR § 1.111
Serial No. 09/992,410

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. **[Currently Amended]** A method of mapping a data stream through a cross-connect via two or more parallel shelves of a switch core of the cross-connect, wherein each shelf has a respective independent pointer processing state machine, and the data stream comprises either one of Synchronous Optical Network (SONET) and Synchronous Digital Hierarchy (SDH) signals, the method comprising steps of:

   a) receiving the data stream at an input port of the cross-connect;

   b) splitting the received data stream into at least two sub-streams;

   c) modifying at least one sub-stream to emulate a conventional Synchronous Transport System (STS) concatenation with sufficient accuracy to enable successful pointer processing through a shelf;

   ~~c)~~d) mapping each of the sub-streams to a selected output port of the cross-connect via a respective shelf; and

   ~~d)~~e) constructing an output data stream that is equivalent to the received data stream, at the output port, using content of each of the sub-streams.

2. **[Original]** A method as claimed in claim 1, wherein the data stream comprises an arbitrary mixture of high and low bandwidth signal traffic.

3. **[Cancelled]**

4. **[Currently Amended]** A method as claimed in claim 1, wherein the step of ~~splitting the received data stream~~ modifying at least one sub-stream comprises steps of:

a) inspecting an overhead of each frame of the data stream to determine whether the overhead contains a payload pointer; and

b) if the overhead contains a payload pointer, storing the payload pointer.

5. **[Currently Amended]** A method as claimed in claim 31, wherein the step of modifying at least one sub-streams~~splitting the received data stream~~ comprises a step of assigning a default value to a predetermined set of one or more bits of each frame.

6. **[Original]** A method as claimed in claim 5, wherein the step of assigning a default value comprises a step of writing the default value to the predetermined set of bits.

7. **[Original]** A method as claimed in claim 6, wherein the predetermined set of bits is located within the overhead of each frame.

8. **[Original]** A method as claimed in step 7, wherein the predetermined set of bits comprises SS bits of an H1 byte of the overhead of each frame.

9. **[Original]** A method as claimed in claim 5, wherein the default value is binary "00".

10. **[Currently Amended]** A method as claimed in claim 5, further comprising steps of:

a) determining if a frame is a lead frame of a respective one of the sub-streams;

b) if the frame is a lead frame, examining the frame overhead to determine whether it contains a concatenation indicator; and

c) if the lead frame's overhead contains a concatenation indicator:

replacing the concatenation indicator with a valid payload pointer; and

inserting a split indicator into the predetermined set of bits of the frame.

11. **[Original]** A method as claimed in claim 10, further comprising a step of:

a) if the frame is the lead frame of a sub-stream, forwarding the frame to a next, successive, shelf of the cross-connect; and

b) otherwise, forwarding the frame to the same shelf as the previous frame.

12. **[Original]** A method as claimed in claim 11, wherein the next successive shelf is selected in accordance with a predetermined shelf order sequence.

13. **[Original]** A method as claimed in claim 1, wherein the step of constructing the output data stream comprises, for each sub-stream, steps of:

a) constructing a respective set of sequential frames of the output data stream;

b) mapping payload data from the sub-stream, payload aligned with each of the other sub-streams, to the respective set of frames of the output data stream.

14. **[Original]** A method as claimed in claim 13, wherein a phase relationship between a sub-stream and the output data stream is arbitrary.

15. **[Original]** A method as claimed in claim 13, wherein the step of constructing a respective set of sequential frames of the output serial data stream comprises steps of:

a) copying at least a portion of an overhead of each frame of the respective sub-stream to a corresponding frame of the output data stream;

b) examining each frame of the respective sub-stream to determine whether or not the frame contains a split indicator;

c) if the frame contains a split indicator, inserting a concatenation indicator into the overhead of the corresponding frame of the output data stream; and

d) if the frame does not contain a split indicator examining the frame to determine whether or not the frame contains a payload pointer, and if the frame contains a payload pointer, inserting a valid payload pointer into the overhead of the corresponding frame of the output data stream.

16. **[Original]** A method as claimed in claim 13, wherein the step of mapping payload data from the sub-stream comprises steps of:

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a) buffering the payload data of the sub-stream; and

b) controlling a read operation for reading the buffered payload data, such that corresponding bytes of each sub-stream are read substantially simultaneously.

17. **[Currently Amended]** A cross-connect adapted to map a data stream between an input port and an output port via two or more parallel shelves of a switch core of the cross-connect, each shelf having a respective independent pointer processing state machine and the data stream comprising either one of Synchronous Optical Network (SONET) and Synchronous Digital Hierarchy (SDH) signals, the cross-connect comprising:

a) an input port adapted to receive the data stream;

b) a signal processor adapted to split the received data stream into two or more sub-streams, and forward each sub-stream to a respective shelf, and further adapted to modify at least one sub-stream to emulate a conventional Synchronous Transport System (STS) concatenation with sufficient accuracy to enable successful pointer processing through its respective shelf; and

c) an output port adapted to construct an output data stream that is equivalent to the received data stream, using content of each of the sub-streams.

18. **[Currently Amended]** A cross-connect as claimed in claim 17, wherein the signal processor comprises:

a) means for determining if a frame is a lead frame of a respective one of the sub-streams; and

b) means for modifying a lead frame that contains a concatenation indicator to emulate a lead frame of a Synchronous Optical Network (SONET)/Synchronous Digital Hierarchy (SDH) concatenation.

19. **[Original]** A cross-connect as claimed in claim 18, wherein the means for modifying a lead frame comprises:

a) means for replacing the concatenation indicator with a valid payload pointer; and

b) means for inserting a split indicator into the frame.

20. **[Original]** A cross-connect as claimed in claim 18, wherein the signal processor further comprises:

a) means for forwarding a lead frame of a sub-stream to a next, successive, shelf of the switch core; and

b) means for forwarding any other frame to the same shelf as the previous frame.

21. **[Original]** A cross-connect as claimed in claim 17, wherein, for each shelf of the switch core, the output port comprises:

a) a respective framer adapted to extract payload data and overhead from each successive frame of a respective sub-stream mapped through the shelf;

b) an alignment buffer adapted to align the extracted payload with corresponding extracted payload of at least one other sub-stream; and

c) a read processor adapted to construct a respective set of sequential frames of the output serial data stream, and map payload data from the alignment buffer to the respective set of frames of the output data stream.

22. **[Original]** A cross-connect as claimed in claim 21, wherein a phase relationship between the sub-stream and the output data stream is arbitrary.

23. **[Currently Amended]** A cross-connect as claimed in claim 21, wherein the alignment buffer comprises:

a) an adjustable read pointer; and

b) means for controlling the read pointer to compensate for at least a difference between the propagation delay of the respective sub-stream and ~~at~~ that of at least one other sub-stream;

whereby a timing of a read operation for reading buffered payload data from the alignment buffer is synchronized with the a corresponding read operation of the at least one other sub-stream.

24. **[Original]** A cross-connect as claimed in claim 21, wherein the read processor is adapted to:

a) copy at least a portion of the extracted overhead of each frame of the sub-stream to a corresponding frame of the output data stream;

b) insert a concatenation indicator into the overhead of the corresponding frame of the output data stream, if the frame contains a split indicator; and

c) insert a valid payload pointer into the overhead of the corresponding frame of the output data stream if the frame contains a payload pointer and does not contain a split indicator.